



1 Decay Scheme

Se-75 disintegrates 100% by electron capture to excited levels and to the ground state of As-75.
Le Se-75 se désintègre à 100% par capture électronique vers des niveaux excités et le niveau fondamental de As-75.

2 Nuclear Data

$$T_{1/2}({}^{75}\text{Se}) : 119,781 \quad (24) \quad \text{d}$$

$$Q^+({}^{75}\text{Se}) : 863,6 \quad (8) \quad \text{keV}$$

2.1 Electron Capture Transitions

	Energy keV	Probability × 100	Nature	lg <i>ft</i>	P_K	P_L	P_M
$\epsilon_{0,9}$	42,0 (8)	0,00734 (18)	1st Forbidden	7,9	0,8038 (32)	0,1633 (26)	0,0300 (8)
$\epsilon_{0,8}$	245,9 (8)	0,0126 (6)	1st Forbidden	8,8	0,8724 (16)	0,1071 (13)	0,0186 (4)
$\epsilon_{0,7}$	291,4 (8)	0,03484 (35)	1st Forbidden	9,1	0,8740 (16)	0,1058 (13)	0,0184 (4)
$\epsilon_{0,6}$	395,0 (8)	0,00036 (5)	1st Forbidden	11,1	0,8762 (16)	0,1041 (13)	0,0180 (4)
$\epsilon_{0,5}$	462,9 (8)	94,5 (21)	Allowed	6,1	0,8770 (16)	0,1033 (13)	0,0179 (4)
$\epsilon_{0,3}$	584,1 (8)	2,1 (14)	1st Forbidden	8	0,8781 (15)	0,1025 (13)	0,0177 (4)
$\epsilon_{0,2}$	598,9 (8)	1,4 (2)	1st Forbidden	8,2	0,8782 (15)	0,1024 (13)	0,0177 (4)
$\epsilon_{0,0}$	863,6 (8)	1,42 (22)	1st Forbidden	8,5	0,8794 (15)	0,1014 (12)	0,0175 (4)

2.2 Gamma Transitions and Internal Conversion Coefficients

	Energy keV	$P_{\gamma+ce}$ × 100	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{3,2}(\text{As})$	14,8847 (13)	0,0206 (6)	M1 (+E2)				
$\gamma_{4,3}(\text{As})$	24,3815 (14)	5,5 (13)	M2	165,4 (240)	32,6 (5)	5,13 (10)	204 (3)
$\gamma_{2,1}(\text{As})$	66,0518 (8)	1,44 (6)	M1+ 1,44% E2	0,29 (3)	0,034 (5)	0,0052 (7)	0,33 (3)

	Energy keV	$P_{\gamma+ce}$ $\times 100$	Multipolarity	α_K	α_L	α_M	α_T
$\gamma_{3,1}(\text{As})$	80,9365 (15)	0,0259 (15)	[E2]	1,486 (21)	0,216 (3)	0,0326 (5)	1,736 (25)
$\gamma_{5,4}(\text{As})$	96,7340 (9)	6,35 (14)	E2	0,772 (11)	0,1044 (15)	0,01576 (22)	0,893 (13)
$\gamma_{5,3}(\text{As})$	121,1155 (11)	17,56 (37)	E1	0,0372 (6)	0,00388 (6)	0,000588 (9)	0,0417 (6)
$\gamma_{5,2}(\text{As})$	136,0001 (6)	59,2 (21)	E1	0,0263 (4)	0,00274 (4)	0,000415 (6)	0,0295 (5)
$\gamma_{1,0}(\text{As})$	198,6060 (12)	1,48 (6)	M1+ 9,03% E2	0,0167 (9)	0,00182 (11)	0,000277 (16)	0,0189 (11)
$\gamma_{9,7}(\text{As})$	249,3 (3)	0,00400 (13)	[M1,E2]	0,015 (9)	0,0017 (10)	0,00026 (15)	0,017 (10)
$\gamma_{2,0}(\text{As})$	264,6576 (9)	59,17 (19)	M1+E2	0,00646 (25)	0,00068 (3)	0,000104 (5)	0,0072 (3)
$\gamma_{3,0}(\text{As})$	279,5422 (10)	25,11 (9)	M1 + 25,04 % E2	0,0081 (4)	0,00087 (4)	0,000133 (6)	0,0091 (4)
$\gamma_{4,0}(\text{As})$	303,9236 (10)	1,378 (5)	E3	0,0469 (7)	0,00592 (9)	0,000899 (13)	0,0538 (8)
$\gamma_{7,1}(\text{As})$	373,61 (24)	0,00258 (11)	[E2]	0,00580 (9)	0,000628 (9)	0,0000954 (14)	0,00653 (10)
$\gamma_{5,0}(\text{As})$	400,6572 (8)	11,403 (43)	E1	0,001202 (17)	0,0001241 (18)	0,0000189 (3)	0,001346 (19)
$\gamma_{8,1}(\text{As})$	419,1 (4)	0,0121 (6)	[M1,E2]	0,003 (1)	0,00032 (11)	0,000049 (16)	0,0034 (11)
$\gamma_{6,0}(\text{As})$	468,6 (4)	0,00036 (5)	[M1,E2]	0,0022 (6)	0,00023 (7)	0,000035 (10)	0,0025 (7)
$\gamma_{9,3}(\text{As})$	542,02 (18)	0,000435 (6)	[M1,E2]	0,0015 (3)	0,00015 (4)	0,000023 (6)	0,0016 (4)
$\gamma_{9,2}(\text{As})$	556,90 (18)	0,00277 (12)	[E2]	0,001628 (25)	0,000172 (3)	0,0000262 (4)	0,00183 (3)
$\gamma_{7,0}(\text{As})$	572,22 (24)	0,03626 (31)	M1 + 3,48 % E2	0,001040 (15)	0,0001079 (16)	0,00001646 (24)	0,001165 (17)
$\gamma_{8,0}(\text{As})$	617,8 (4)	0,00453 (5)	[M1,E2]	0,00103 (18)	0,000108 (20)	0,000017 (3)	0,00116 (20)
$\gamma_{9,0}(\text{As})$	821,56 (18)	0,000134 (8)	[E2]	0,000558 (8)	0,0000582 (9)	0,00000887 (13)	0,000626 (9)

3 Atomic Data

3.1 As

ω_K	:	0,575	(4)
$\bar{\omega}_L$:	0,0155	(5)
n_{KL}	:	1,232	(4)

3.1.1 X Radiations

	Energy keV	Relative probability		
X _K	K α_2	10,50814	51,53	
	K α_1	10,5438	100	
	K β_3	11,7204	}	
	K β_1	11,7263	}	
	K β_5''	11,821	}	22,87
	K β_2	11,8643	}	
	K β_4		}	0,86
	X _L	L ℓ	1,1195	
	L α	1,2816 – 1,2824		
	L η	1,1552		
	L β	1,3152 – 1,4892		
	L γ	1,3508 – 1,5312		

3.1.2 Auger Electrons

	Energy keV	Relative probability
Auger K		
KLL	8,75 – 9,10	100
KLX	10,12 – 10,54	31
KXY	11,44 – 11,80	2,4
Auger L		
	1,1 – 1,3	

4 Electron Emissions

		Energy keV	Electrons per 100 disint.
e _{AL}	(As)	1,1 - 1,3	119,6 (15)
e _{AK}	(As)		41,4 (14)
	KLL	8,75 - 9,10	}
	KLX	10,12 - 10,54	}
	KXY	11,44 - 11,80	}
ec _{4,3} K	(As)	12,5148 (14)	4,5 (12)
ec _{4,3} L	(As)	22,8550 - 23,0584	0,88 (20)
ec _{4,3} M	(As)	24,1780 - 24,3403	0,139 (31)
ec _{2,1} K	(As)	54,1851 (8)	0,305 (32)
ec _{2,1} L	(As)	64,5253 - 64,7287	0,036 (5)
ec _{3,1} K	(As)	69,0698 (15)	0,0141 (8)
ec _{5,4} K	(As)	84,8673 (9)	2,59 (7)
ec _{5,4} L	(As)	95,208 - 95,411	0,350 (9)
ec _{5,4} M	(As)	96,530 - 96,693	0,0528 (13)
ec _{5,3} K	(As)	109,2488 (11)	0,627 (17)
ec _{5,3} L	(As)	119,5890 - 119,7924	0,0654 (17)
ec _{5,2} K	(As)	124,1334 (6)	1,51 (6)
ec _{5,2} L	(As)	134,4736 - 134,6770	0,158 (6)
ec _{5,2} M	(As)	135,7966 - 135,9589	0,0239 (9)
ec _{1,0} K	(As)	186,7393 (12)	0,0244 (17)
ec _{2,0} K	(As)	252,7909 (9)	0,378 (15)
ec _{2,0} L	(As)	263,1311 - 263,3345	0,0400 (18)
ec _{3,0} K	(As)	267,676 (1)	0,202 (10)
ec _{3,0} L	(As)	278,0157 - 278,2191	0,0217 (10)
ec _{4,0} K	(As)	292,057 (1)	0,0614 (9)
ec _{5,0} K	(As)	388,7905 (8)	0,01369 (20)

5 Photon Emissions

5.1 X-Ray Emissions

		Energy keV	Photons per 100 disint.	
XL	(As)	1,1195 — 1,5312	1,93 (5)	
XK α_2	(As)	10,50814	16,5 (6)	} K α
XK α_1	(As)	10,5438	31,9 (11)	
XK β_3	(As)	11,7204	}	} K' β_1
XK β_1	(As)	11,7263	}	
XK β_5''	(As)	11,821	}	
XK β_2	(As)	11,8643	}	
XK β_4	(As)	}	0,276 (13)	

5.2 Gamma Emissions

	Energy keV	Photons per 100 disint.
$\gamma_{3,2}$ (As)	14,8847 (13)	0,0206 (6)
$\gamma_{4,3}$ (As)	24,3815 (14)	0,027 (6)
$\gamma_{2,1}$ (As)	66,0518 (8)	1,085 (35)
$\gamma_{3,1}$ (As)	80,9365 (15)	0,0095 (5)
$\gamma_{5,4}$ (As)	96,7340 (9)	3,35 (7)
$\gamma_{5,3}$ (As)	121,1155 (11)	16,86 (36)
$\gamma_{5,2}$ (As)	136,0001 (6)	57,7 (20)
$\gamma_{1,0}$ (As)	198,6060 (12)	1,46 (6)
$\gamma_{9,7}$ (As)	249,3 (3)	0,00394 (12)
$\gamma_{2,0}$ (As)	264,6576 (9)	58,75 (19)
$\gamma_{3,0}$ (As)	279,5422 (10)	24,89 (9)
$\gamma_{4,0}$ (As)	303,9236 (10)	1,308 (5)
$\gamma_{7,1}$ (As)	373,61 (24)	0,00256 (11)
$\gamma_{5,0}$ (As)	400,6572 (8)	11,388 (42)
$\gamma_{8,1}$ (As)	419,1 (4)	0,0121 (6)
$\gamma_{6,0}$ (As)	468,6 (4)	0,00036 (5)
$\gamma_{9,3}$ (As)	542,02 (18)	0,000435 (6)
$\gamma_{9,2}$ (As)	557,8 (9)	0,00276 (12)
$\gamma_{7,0}$ (As)	572,22 (24)	0,03622 (31)
$\gamma_{8,0}$ (As)	617,8 (4)	0,00453 (5)
$\gamma_{9,0}$ (As)	821,56 (18)	0,000134 (8)

6 Main Production Modes

Se – $^{74}\text{Se}(n,\gamma)^{75}\text{Se}$
 As – $^{75}\text{As}(d,2n)^{75}\text{Se}$
 As – $^{75}\text{As}(p,n)^{75}\text{Se}$

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